

IN THE CLAIMS:

1. (Previously Presented) A program-changing method for a network comprising at least two nodes that each have a program, said network further comprising a network management system (NMS) coupled to a node of the nodes, the method comprising the steps of:

(a) transmitting, by the network management system (NMS), a new program data and a control signal to said node coupled to the network management system (NMS) disposed in the network separately from the nodes and configured to manage the changing of the programs of the nodes;

(b) allocating a fixed region in a memory within said node in response to the reception of the new program data, storing the received new program data in the allocated fixed region, and replacing the program of said node coupled to the network management system (NMS) with the new program data responsive to the control signal;

(c) causing the network management system (NMS) to transmit to said program-changed node a data-transmitting signal for transmitting the stored new program data to a node for program-changing, and transmitting, by the network management system (NMS), a control signal to said node for program-changing; and

(d) in response to the data-transmitting signal, causing said program-changed node to transmit the stored new program data thereof to said node for program-changing.

2. (Previously Presented) The method as set forth in Claim 1, wherein the method further comprising the step of (e) replacing the program of said node for program-changing with the new program data received from said program-changed node

responsive to the control signal and the step of (f) transmitting by the network management system (NMS) a data-transmitting signal to the program-changed node for transmitting a new program data to a next node coupled to the program-changed node.

3. (Original) The method as set forth in Claim 2, wherein said nodes are arranged in a straight line or a loop in said network.

4. (Currently Amended) A program-changing method for a network comprising a plurality of nodes including a first node and a second node, each of the first and second nodes having a program, the method comprising the steps of:

(a) transmitting a new program data and a first control signal to the first node, said first node being coupled to a network management system (NMS) located in the network remotely from the plural nodes;

(b) changing the program of said first node to said new program data under the control of said control signal;

(c) storing said new program data in a memory means of said first node;

(d) transmitting, by said NMS and to said first node, a first command signal to transmit the stored new program data to the second node and transmitting a second control signal to said second node; and,

(e) upon receiving said stored new program data from said first node, changing the program of said second node to said new program data under the control of said second control signal.

5. (Previously Presented) The method as set forth in Claim 4, wherein the plural nodes are arranged in a straight line or a loop in said network.

6. (Currently Amended) The method as set forth in Claim 4, wherein the plural nodes further include a remaining node, said method further comprising the steps of:

(f) storing said new program data received from said first node in a memory means of said second node;

(g) transmitting, by said NMS, a second command signal to said second node to transmit said stored new program data in said second node to said remaining node and transmitting ~~said second~~ a third control signal to said remaining node; and

(h) upon receiving said stored new program data from said second node, changing the program of said remaining node to said new program data under the control of said ~~second~~ third control signal.

7. (Currently Amended) The method as set forth in Claim 4, wherein the plural nodes include a third node having a program, said method further comprising the step of repeating the steps (c), (d), and (e) for changing the program in said third node in an iteration in which said second node of a previous iteration becomes said first node, the third node becomes said second node, a second command signal becomes said first command signal, and a third control signal becomes said second control signal.

8. (Currently Amended) A program-changing method for a plurality of nodes that each have a program, said nodes being arranged in a network having a network management system (NMS) remote from the plural nodes and coupled to one of the plural nodes, the method comprising the steps of:

(a) transmitting a new program data and a first control signal to the one of the plural nodes coupled to said network management system (NMS) which is disposed in the network separately from the plural nodes;

(b) storing said new program data in a memory means of the one node;

(c) changing the program of said one node to said new program data under the control of said first control signal;

(d) transmitting, by said NMS to said one node, a first command signal to transmit the stored new program data to another of the plural nodes and transmitting a second control signal to the another node; and

(e) upon receiving said stored new program data, changing the program of said another node to said new program data under the control of said second control signal.

9. (Currently Amended) The method as set forth in Claim 8, further comprising the step of repeating the steps (b), (c), (d) and (e) in an iteration in which said another node of a previous iteration becomes said one node, a third control signal becomes said second~~first~~ control signal, and a second command signal becomes said first~~second~~ command signal and a fourth control signal becomes said ~~second~~ control signal.

10. (Previously Presented) The method as set forth in Claim 8, wherein a node of said plural nodes other than said one or said another node remains, said method further comprising the steps of:

(f) transmitting, by said NMS, another command signal to transmit said stored new program data in said another node to the remaining one of the plural nodes and transmitting a third control signal to that remaining node;

(g) in response to said another command signal, storing said new program data from said another node in a memory means of said remaining node;

(h) upon receiving said stored new program data from said another node, changing the program of said remaining node to said new program data under the control of said third control signal.

11. (Previously Presented) The method as set forth in Claim 8, wherein the plural nodes are arranged in a straight line or a loop in said network.

12. (Canceled)

13. (Previously Presented) The method of claim 1, wherein the programs of each of the nodes are identical.

14. (Currently Amended) The method of claim 7, wherein each remaining one of the plural nodes has a program which is updated in a respective additional iteration of the steps c), d) and e) for a current one of the plural nodes by means of a current control

signal, wherein said second node of a previous iteration becomes said first node, the current node becomes said second node, a second command signal becomes said first command signal, and the current control signal becomes said second control signal.

15. (Previously Presented) The method as set forth in Claim 2, wherein ~~the~~said method further ~~comprising~~comprises the steps of:

(g) transmitting, by said NMS, a control signal to said next node; and

(h) replacing, by said next node, the program of said next node with the new program data received from said program-changed node responsive to said control signal to said next node~~by said node receiving the data-transmitting signal a new program data to the next node and replacing the program of said next node for program-changing with the new program data received from said node receiving the data-transmitting signal, responsive to the control signal received from the network management system (NMS).~~

16. (New) The method as set forth in claim 15, wherein said node for program-changing is disposed in said network between said program-changed node and said next node, and wherein said new program data received from said program-changed node is received from said node for program-changing.

17. (New) The method as set forth in claim 15, wherein said program-changed node has plural output paths on said network, and wherein said new program data received from said program-changed node is received by said next node on a path

different from that on which is transmitted said stored new program data thereof to said node for program-changing.

18. (New) A program-changing method for a network that includes a plurality of nodes and, connected to a node of the plural nodes, a Network Management System (NMS), the plural nodes being connected in a particular formation, said method comprising the steps of:

transmitting a new program, from the NMS, to said node of the plural nodes; and

iteratively propagating the new program forward along said formation from one node to what, from the standpoint of inter-node hops on said formation, is an immediately neighboring node of said one node such that each of the plural nodes receives the new program, each of said plural nodes receiving said new program exactly once, each of said hops of the propagation being controlled by the NMS.

19. (New) The program-changing method as claimed in claim 18, wherein the NMS exercises the control by issuing two types of signals, one of the types being a program-changing signal that commands a node of the plurality to, by storing at a fixed, allocated portion of memory at said node of the plurality, replace, with the new program, a program stored in said memory, the other type being a data-transmitting signal that commands said node of the plurality to retrieve the new program from said memory and to transmit the retrieved program to said immediately neighboring node.

20. (New) The program-changing method as claimed in claim 18, wherein said node of the plural nodes has a plurality of output paths along said formation and transmits said new program along more than one of the plural output paths.

21. (New) The program-changing method as claimed in claim 18, wherein said plurality of nodes includes at least four nodes.

22. (New) The program-changing method as claimed in claim 18, wherein the NMS is disposed remotely from the plural nodes.

23. (New) The program-changing method as claimed in claim 18, wherein the particular formation is a ring or a single line.